AMENDMENT

Amendments to the Claims: Please replace all prior versions and listings of claims with the following listing of claims.

LISTING OF CLAIMS:

1-3.   (Cancelled)

4.   (**Currently Amended**) A method ~~of monitoring a state of a~~ for component to service ~~supported by a network, wherein the network includes a plurality of network components, wherein the service supports a business process under service level management~~ mapping in ~~association with a~~ service level management ~~domain, the method~~ comprising ~~the steps of~~:

   providing a service over a network having a plurality of network components that support the service, wherein performance of the service depends upon performances of the plurality of network components that support the service, and wherein the service has a state that represents the performance of the service;

   monitoring a plurality of component parameters for the plurality of ~~selecting one or more~~ network components that support ~~on which~~ the service using a plurality of monitoring agents, wherein each of the plurality of monitoring agents are configured to monitor a subset of ~~depends from among~~ the plurality of network components in a respective domain of a plurality of domains of the network;

   mapping the plurality of component parameters monitored across the plurality of domains to a service parameter that represents the state of ~~one or more selected network components to~~ the service, wherein the state of the service indicates whether the service conforms to an agreed upon service level identified in a service level agreement;

   ~~monitoring the one or more selected network components to determine the state of the service;~~

   monitoring the service parameter that represents the state of the service to detect a change in the state of the service; and

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~~when the state of the service changes,~~ determining a cause of the change in the state of the service ~~by performing an action~~ in response to detecting the change in the state of the service, wherein determining the ~~action comprising one or more~~ cause of the change in the state of the service includes:

~~invoking a routine to determine an operational characteristic of at least one of the selected network components,~~

determining ~~constructing~~ a first value for a first subset ~~database query to determine the operational characteristic of at least one~~ of the monitored component parameters in a first domain of the plurality of domains of the ~~selected~~ network ~~components,~~ and a second value for a second subset of the monitored component parameters in a second domain of the plurality of domains of the network; and

executing ~~requesting a change to~~ one or more data mining algorithms that discover a first influence that the first subset of component parameters have on ~~of at least one of~~ the ~~selected network components~~ service parameter from the first value and a second influence that the second subset of component parameters have on the service parameter from the second value.

5-12.   (Cancelled)

13.   (Currently Amended) A method for component to ~~monitoring a service, the~~ service ~~supporting a business process under~~ mapping in service level management ~~in association with a service level agreement, wherein the service is monitored by an enterprise management system, wherein the business process depends on at least a portion of a network,~~ ~~the method~~ comprising ~~the steps of~~:

providing a service over a network having a plurality of network components that support the service, wherein performance of the service depends upon performances of the plurality of network components that support the service, and wherein the service has a state that represents the performance of the service;

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monitoring a plurality of component parameters for the plurality of network components that support the service across a plurality of domains of the network;

mapping the plurality of ~~at least one~~ component parameters monitored across the plurality of domains of the network ~~on which the~~ to a service ~~depends to~~ parameter that represents the state of the service, wherein the state of the service indicates whether the service conforms to an agreed upon service level identified in a service level agreement;

~~monitoring, at the enterprise management system, at least one parameter of the mapped network component, the at least one parameter indicating an operational characteristic of the network component that is indicative of a state of the service, wherein the state of the service is indicative of a current level of service relative to an agreed upon level of service in the service level agreement;~~

monitoring ~~determining, at~~ the ~~enterprise management system,~~ service parameter that represents the state of the service to detect a change in ~~from~~ the ~~parameter~~ state of the ~~monitored network component~~ service; and

determining a cause of ~~monitoring, at~~ the ~~enterprise management system,~~ change in the state of the service in response to detecting ~~provide service level management for~~ the change in ~~business process that indicates~~ the ~~current level~~ state of the service, wherein determining ~~relative to~~ the cause of the change in the state ~~agreed upon level~~ of the service includes:

executing one or more data mining algorithms to discover respective influences on the service parameter for a first subset of the monitored component parameters in a first domain of the plurality of domains of the network;

executing the one or more data mining algorithms to discover respective influences on the service parameter for a second subset of the monitored component parameters in a second domain of the plurality of domains of the network; and

identifying at least one of the component parameters in the first subset of the monitored component parameters or the second subset of the monitored component parameters as the cause of the change in the state of the service.

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14.   (Currently Amended) The method of claim 13, wherein the ~~method further comprises a step of, associating a parameter of the~~ service ~~with a~~ parameter ~~of the associated network component, the service parameter comprising~~ has a ~~variable having a~~ value that indicates whether the state ~~which represents an operational characteristic~~ of the service ~~provided by~~ conforms to the agreed upon service level identified in the ~~network~~ service level agreement.

15.   (Currently Amended) The method of claim 14, wherein determining the ~~method~~ cause of the change in the state of the service further ~~comprises~~ includes organizing the plurality of component parameters monitored across the plurality of domains of the network into a ~~step of, determining a value for the service~~ time ordered set of parameter vectors that reflect ~~from~~ the state ~~value~~ of the ~~associated network component parameter~~ service over an interval that includes a plurality of time increments.

16.   (Currently Amended) The method of claim [[13]] 15, wherein monitoring ~~the method further comprises a step of, invoking a mathematical simulation of~~ the service parameter to ~~determine~~ detect the change in the state of the service includes:

determining that the time ordered set of parameter vectors reflects that the state of the service conformed to the agreed upon service level at a first one of the plurality of time increments in the interval; and

detecting the change in the state of the service in response to the time ordered set of parameter vectors further reflecting that the state of the service did not conform to the agreed upon service level at a second one of the plurality of time increments in the interval.

17.   (Currently Amended) The method of claim [[13]] 15, wherein monitoring the ~~method further comprises a step of, invoking a reasoning mechanism~~ service parameter to ~~determine~~ detect the change in the state of the ~~network component~~ service includes:

determining that the time ordered set of parameter vectors reflects that the state of the service did not conform to the agreed upon service level at a first one of the plurality of time increments in the interval; and

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detecting the change in the state of the service in response to the time ordered set of parameter vectors further reflecting that the state of the service conformed to the agreed upon service level at a second one of the plurality of time increments in the interval.

18.   (Currently Amended) The method of claim 13, ~~wherein the method~~ further comprising ~~comprises a step of, associating an agent with the monitored network component to generate~~ generating an alarm in response to detecting ~~when a value of a parameter of~~ the ~~monitored network component crosses a threshold~~ change in the state of the service.

19.   (Currently Amended) The method of claim 13, wherein the one or more data mining algorithms include ~~method further comprises a step of, selecting~~ a rule induction algorithm that comprises producing ~~from~~ a ~~repository~~ plurality of rules that represent ~~associated with~~ the respective influences that the first subset ~~state~~ of the monitored component parameters have on the service~~, wherein~~ parameter and the respective influences that the second subset of ~~rule indicates an action based on~~ the monitored component parameters have on ~~state of~~ the service parameter.

20.   (Currently Amended) The method of claim 19, wherein the one or more rules include one or more ~~method further comprises a step~~ of, ~~invoking~~ propositional statements or quantified statements that represent the respective influences that the first subset of the monitored component parameters and the second subset of the monitored component parameters have on ~~action to implement~~ the ~~selected rule~~ service parameter.

21.   (Currently Amended) The method of claim 19, wherein the one or more data mining algorithms further include a neural network algorithm that ~~action~~ comprises:

identifying a ~~step~~ case library that includes a plurality of cases representing episodes of~~,~~ ~~modifying a data structure having a representation~~ problem solving;

applying the plurality of rules to identify one or more of the cases in the case library that are relevant to discovering ~~operational characteristic of~~ the respective influences for the

first subset of the monitored component parameters and the second subset of the monitored

component parameters; and

adapting one or more solution variable associated with the identified cases using

parameterized adaptation logic to discover the respective influences that the first subset of the

monitored component parameters and the second subset of the monitored component

parameters have on the service parameter.

22. **(Currently Amended)** The method of claim [[19]] 13, wherein the one or more data

mining algorithms include a decision tree algorithm that ~~action~~ comprises:

producing a decision tree that represents the respective influences that the first subset

~~step~~ of, ~~invoking a database query to determine~~ the ~~operational characteristic~~ monitored

component parameters and the second subset of the ~~network~~ monitored component

parameters have on the service parameter; and

representing the respective influences that the first subset of the monitored

component parameters and the second subset of the monitored component parameters have

on the service parameter using one or more of numeric values or binary values.

23. **(Currently Amended)** The method of claim [[19]] 13, wherein the one or more data

mining algorithms include a top N algorithm that ~~action~~ comprises:

identifying a predetermined number ~~step~~ of, ~~invoking a second reasoning mechanism to~~

~~determine~~ the component parameters in the first subset ~~operational characteristic~~ of the

~~network~~ monitored component parameters and the second subset of the monitored

component parameters that have a greatest influence on the service parameter; and

producing a list that includes the identified component parameters having the greatest

influence on the service parameter, wherein the identified component parameters are listed in

a decreasing order of the respective influences that the identified component parameters have

on the service parameter.

24.   (Currently Amended) The method of claim [[19]] 13, wherein the one or more data mining algorithms include an inductive logic algorithm that ~~action~~ comprises:

incorporating knowledge relating ~~a step of, invoking a routine~~ to ~~determine~~ the plurality of domains ~~operational characteristic~~ of the network and knowledge relating to the first subset of the monitored component parameters and the second subset of the monitored component parameters within a rule base;

inferring the respective influences that each of the first subset of the monitored component parameters and the second subset of the monitored component parameters have on the service parameter using the knowledge incorporated within the rule base; and

producing one or more of propositional statements or quantified statements that express the respective influences that the each of the first subset of the monitored component parameters and the second subset of the monitored component parameters have on the service parameter.

25.   (Currently Amended) The method of claim [[20]] 13, wherein the one or more data mining algorithms include a fuzzy logic algorithm that ~~reasoning mechanism~~ comprises:

translating ~~a step of, selecting rules from~~ the first subset of the monitored component parameters ~~rule repository~~ and ~~invoking actions to implement~~ the second subset of ~~selected rules until~~ the monitored component parameters into ~~service achieves~~ a ~~desired~~ plurality of respective fuzzy concepts;

determining grades of membership that the first subset of the monitored component parameters and the second subset of the monitored component parameters have in the respective fuzzy concepts, wherein the grades of membership quantify transitions between a plurality of states in a state transition graph; and

inferring the respective influences that each of the first subset of the monitored component parameters and the second subset of the monitored component parameters have on the service parameter from the grades of membership that each of the first subset of the monitored component parameters and the second subset of the monitored component parameters have in the respective fuzzy concepts.

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26.   (Cancelled)

27.   (Currently Amended)   A system for <u>component to</u> ~~monitoring a service, the~~ service ~~supporting a business process under~~ <u>mapping in</u> service level management ~~in association with a service level agreement, wherein the service is monitored by an enterprise management system, wherein the business process is performable in connection with at least a portion of a network, the system~~ comprising:

a <u>network having a plurality of network components that support a service provided over the network, wherein performance of the service depends upon performances of the plurality of network components that support the service, and wherein the service has a state that represents the performance of the service;</u>

~~a mapping mechanism for mapping a component of the network on which the service depends to the service;~~

a <u>plurality of</u> monitoring <u>agents that monitor a plurality of component parameters</u> ~~mechanism~~ for ~~monitoring at least one parameter of~~ the ~~mapped network~~ <u>plurality of</u> component <u>parameters that support</u> ~~at the enterprise management system, the at least one parameter indicating an operational characteristic of the network component that is indicative of a state of the service, wherein the state of the~~ service <u>across</u> ~~is indicative of~~ a <u>plurality</u> ~~current level~~ of <u>domains</u> ~~service relative to an agreed upon level~~ of ~~service in~~ the ~~service level agreement~~ <u>network</u>; <u>and</u>

<u>a network management system configured to:</u>

<u>map the plurality of component parameters monitored across the plurality of domains of the network a service parameter that represents the state of the service, wherein the state of the service indicates whether the service conforms to an agreed upon service level identified in a service level agreement;</u>

<u>monitor</u> ~~a reasoning mechanism for determining, at~~ the service <u>parameter that</u> <u>represents</u> ~~management system,~~ the state of the service ~~from~~ <u>to detect a change in</u> the ~~parameter~~ <u>state</u> of the ~~monitored network component~~ <u>service</u>; ~~and~~

execute one or more data mining algorithms to discover respective influences on ~~a service monitoring mechanism for monitoring, at~~ the service parameter for a first subset ~~management system, the state~~ of the monitored component parameters in a first domain of ~~service supporting~~ the plurality of domains ~~business process to provide service level management~~ of the network in response to detecting ~~business process that indicates~~ the change in the state ~~current level of service relative to the agreed upon level~~ of the service;

execute the one or more data mining algorithms to discover respective influences on the service parameter for a second subset of the monitored component parameters in a second domain of the plurality of domains of the network in response to detecting the change in the state of the service; and

identify at least one of the component parameters in the first subset of the monitored component parameters or the second subset of the monitored component parameters as the cause of the change in the state of the service.

28.   (Currently Amended)   The system of claim 27, wherein the ~~mapping mechanism associates a parameter of the~~ service ~~with the~~ parameter ~~of the associated network component, the service parameter comprising~~ has a ~~variable having a~~ value that indicates whether the state ~~which represents an operational characteristic~~ of the service ~~provided by~~ conforms to the agreed upon service level identified in the ~~network~~ service level agreement.

29.   (Currently Amended)   The system of claim 28, wherein ~~a value for~~ the network management system is further configured to organize the plurality of component parameters monitored across the plurality of domains of the network into a time ordered set of ~~service~~ parameter vectors that reflect the state ~~is determined from a value~~ of the ~~associated network component~~ service over an interval that includes a plurality of time increments.

30.   (Currently Amended) The system of claim [[27]] 29, wherein the network management ~~reasoning mechanism comprises a rule-based reasoning~~ system is further configured to:

determine that ~~for determining~~ the ~~condition~~ time ordered set of parameter vectors reflects that the state of the service conformed to the agreed upon service level at a first one of the plurality of time increments in the interval; and

detect the change in the state of the service in response to the time ordered set of parameter vectors further reflecting that the state of the service did not conform to the agreed upon service level at a second one of the plurality of time increments in the interval.

31.   (Currently Amended) The system of claim [[27]] 29, wherein the network management ~~reasoning mechanism comprises a model-based reasoning~~ system is further configured to:

determine that ~~for determining~~ the ~~condition~~ time ordered set of parameter vectors reflects that the state of the service did not conform to the agreed upon service level at a first one of the plurality of time increments in the interval; and

detect the change in the state of the service in response to the time ordered set of parameter vectors further reflecting that the state of the service conformed to the agreed upon service level at a second one of the plurality of time increments in the interval.

32.   (Currently Amended) The system of claim 27, wherein the one or more data mining algorithms include a rule induction algorithm that ~~reasoning mechanism~~ comprises producing a plurality of rules that represent ~~case-based reasoning system for determining~~ the ~~condition of~~ respective influences that the first subset of the monitored component parameters have on the service parameter and the respective influences that the second subset of the monitored component parameters have on the service parameter.

33.   (Currently Amended) The system of claim [[27]] 32, wherein the one or more rules include one or more of propositional statements or quantified statements that represent ~~reasoning mechanism comprises a state-transition graph reasoning system for determining~~ the ~~condition of~~ respective influences that the first subset of the monitored component parameters and the second subset of the monitored component parameters have on the service parameter.

34.   (**Currently Amended**) The system of claim [[27]] <u>32</u>, wherein the <u>one or more data</u> <u>mining algorithms further include a neural network algorithm that</u> ~~reasoning mechanism~~ comprises<u>:</u>

identifying a ~~codebook reasoning system for determining~~ <u>case library that includes a</u> <u>plurality of cases representing episodes of problem solving;</u>

applying the ~~condition~~ <u>plurality of rules to identify one or more of the cases in the case</u> <u>library that are relevant to discovering the respective influences for the first subset</u> of the <u>monitored component parameters and the second subset of the monitored component</u> <u>parameters; and</u>

<u>adapting one or more solution variable associated with the identified cases using</u> <u>parameterized adaptation logic to discover the respective influences that the first subset of the</u> <u>monitored component parameters and the second subset of the monitored component</u> <u>parameters have on the</u> service <u>parameter</u>.

35.   (**Currently Amended**) The system of claim 27, wherein the <u>one or more data mining</u> <u>algorithms include a decision tree algorithm that comprises:</u>

<u>producing a decision tree that represents</u> ~~reasoning mechanism determines~~ the ~~condition~~ <u>respective influences that the first subset</u> of the <u>monitored component parameters</u> <u>and the second subset of the monitored component parameters have on the</u> service <u>parameter; and</u>

<u>representing the respective influences that the first subset</u> ~~from a mathematical~~ ~~simulation~~ of the <u>monitored component parameters and the second subset of the monitored</u> <u>component parameters have on the</u> service <u>parameter using one or more of numeric values or</u> <u>binary values</u>.

36.   (**Currently Amended**) The system of claim [[28]] <u>27</u>, wherein the <u>network management</u> system <u>is</u> further ~~comprises, an agent associated with the monitored network component~~

configured to generate an alarm in response to detecting ~~when the value of the parameter of~~ the ~~monitored network component crosses a threshold~~ change in the state of the service.

37.   (**Currently Amended**) The system of claim 27, wherein the one or more data mining algorithms include a top N algorithm that ~~reasoning mechanism~~ comprises:

identifying a ~~data structure holding a representation~~ predetermined number of the component parameters in the first subset ~~an operational characteristic~~ of the monitored component parameters and the second subset of the monitored component parameters that have a greatest influence on the service parameter; and

~~a rule repository having a rule indicating an operation based on the state of the service;~~ ~~and~~

producing a list that includes ~~an inference mechanism selecting~~ the ~~rule from~~ identified component parameters having the ~~rule repository applicable to~~ greatest influence on the service parameter, wherein the identified component parameters are listed in a decreasing order ~~state~~ of the respective influences that the identified component parameters have on the service parameter.

38.   (**Currently Amended**) The system of claim [[37]] 27, wherein the one or more data mining algorithms include an inductive logic algorithm that comprises:

incorporating knowledge relating to ~~inference mechanism invokes~~ the ~~operation~~ plurality of domains of the network and knowledge relating to ~~implement~~ the ~~selected~~ first subset of the monitored component parameters and the second subset of the monitored component parameters within a rule base;

inferring the respective influences that each of the first subset of the monitored component parameters and the second subset of the monitored component parameters have on the service parameter using the knowledge incorporated within the rule base; and

producing one or more of propositional statements or quantified statements that express the respective influences that the each of the first subset of the monitored component

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parameters and the second subset of the monitored component parameters have on the service parameter.

39. **(Currently Amended)** The system of claim [[37]] 27, wherein the one or more data mining algorithms include a fuzzy logic algorithm that comprises:

translating ~~operation modifies~~ the ~~representation~~ first subset of the monitored component parameters and the second subset of the monitored component parameters into a plurality of respective fuzzy concepts;

determining grades of membership that the first subset of the monitored component parameters and the second subset of the monitored component parameters have ~~service~~ in the ~~data structure~~ respective fuzzy concepts, wherein the grades of membership quantify transitions between a plurality of states in a state transition graph; and

inferring the respective influences that each of the first subset of the monitored component parameters and the second subset of the monitored component parameters have on the service parameter from the grades of membership that each of the first subset of the monitored component parameters and the second subset of the monitored component parameters have in the respective fuzzy concepts.

40-48. **(Cancelled)**

49. **(Currently Amended)** A ~~computer program product comprising a~~ computer-readable medium containing ~~having~~ computer-executable instructions ~~logic recorded thereon~~ for providing ~~enabling a processor in a computer system to monitor a service, the~~ service analysis ~~supporting a business process under~~ in service level management ~~in association with a service level agreement~~, wherein executing the computer-executable instructions ~~the service is monitored by an enterprise management system, wherein the business process depends on at least a portion of~~ on a ~~network, the~~ computer ~~program adapted to cause~~ causes the computer system to ~~perform the steps of~~:

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provide a service over a network having a plurality of network components that support the service, wherein performance of the service depends upon performances of the plurality of network components that support the service, and wherein the service has a state that represents the performance of the service;

monitor a plurality of component parameters for the plurality of network components that support the service across a plurality of domains of the network;

map the plurality of ~~mapping at least one~~ component parameters monitored across the plurality of domains of the network ~~on which the~~ to a service ~~depends to~~ parameter that represents the state of the service, wherein the state of the service indicates whether the service conforms to an agreed upon service level identified in a service level agreement;

monitor ~~monitoring, at~~ the ~~enterprise management system, at least one~~ service parameter that represents ~~of the mapped network component, the at least one parameter indicating an operational characteristic of~~ the ~~network component that is indicative of a~~ state of the service~~, wherein the state of the service is indicative of~~ to detect a ~~current level of service relative to an agreed upon level of service~~ change in the state of the service ~~level agreement~~;

execute one or more data mining algorithms to discover respective influences on ~~determining, at~~ the service parameter for a first subset ~~management system, the state~~ of the monitored component parameters in a first domain ~~service from the parameter~~ of the ~~monitored network component~~ network in response to detecting the change in the state of the service; ~~and~~

execute ~~monitoring, at~~ the ~~service management system,~~ one or more data mining algorithms to discover respective influences on the state of the service parameters ~~to provide service level management~~ for a second subset of the monitored component parameters in a second domain of ~~business process that indicates~~ the plurality ~~current level~~ of domains of the network in response ~~service relative~~ to detecting the ~~agreed upon level~~ change in the state of the service; and

identify at least one of the component parameters in the first subset of the monitored component parameters or the second subset of the monitored component parameters as the cause of the change in the state of the service.

50.   (**Currently Amended**) The computer-readable medium program product of claim 49, wherein the computer system further performs a step of, associating a parameter of the service with a parameter of the associated network component, the service parameter comprising has a variable having a value that indicates whether the state which represents an operational characteristic of the service provided by conforms to the agreed upon service level identified in the network service level agreement.

51.   (**Currently Amended**) The computer-readable medium program product of claim [[49]] 50, wherein executing the computer-executable instructions on the computer system further cause performs a step of, determining a value for the computer to organize the plurality of component parameters monitored across the plurality of domains of the network into a time ordered set of service parameter vectors that reflect the state from the value of the associated network component parameter service over an interval that includes a plurality of time increments.

52.   (**Currently Amended**) The computer-readable medium program of claim [[49]] 51, wherein executing the computer-executable instructions on the computer system further cause performs a step of, invoking a mathematical simulation of the service computer to:
        determine that the time ordered set of parameter vectors reflects that the state of the service conformed to the agreed upon service level at a first one of the plurality of time increments in the interval; and
        detect the change in the state of the service in response to the time ordered set of parameter vectors further reflecting that the state of the service did not conform to the agreed upon service level at a second one of the plurality of time increments in the interval.

53.　(**Currently Amended**)　The computer-readable medium ~~program~~ of claim [[49]] 51, wherein executing the computer-executable instructions on the computer ~~system~~ further cause ~~performs a step of, invoking a reasoning mechanism~~ the computer to:

determine that the time ordered set of parameter vectors reflects that the state of the service did not conform to the agreed upon service level at a first one of the plurality of time increments in the interval; and

detect the change in the state of the service in response to the time ordered set of parameter vectors further reflecting that the state of the service conformed to the agreed upon service level at a second one of the plurality of time increments in the interval.

54.　(**Currently Amended**)　The computer-readable medium ~~program~~ of claim 49, wherein the one or more data mining algorithms include ~~computer system further performs~~ a rule induction algorithm that comprises producing a plurality ~~step~~ of~~, associating an agent with~~ rules that represent the respective influences that the first subset of the monitored ~~network~~ component parameters have on the service parameter and the respective influences that the second subset ~~to generate an alarm when a value~~ of the monitored component parameters have on the service [[a]] parameter ~~of the monitored network component crosses a threshold~~.

55.　(**Currently Amended**)　The computer-readable medium ~~program~~ of claim [[49]] 54, wherein the one or more rules include one or more ~~computer system further performs a step~~ of, ~~selecting a rule from a repository of rules associated with~~ propositional statements or quantified statements that represent respective influences that the first subset ~~state~~ of the monitored component parameters and ~~service, wherein~~ the second subset of ~~rule indicates an action based on~~ the ~~state of~~ monitored component parameters have on the service parameter.

56.　(**Currently Amended**)　The computer-readable medium ~~program~~ of claim [[55]] 54, wherein the one or more data mining algorithms further include ~~computer system further performs~~ a ~~step of,~~ neural network algorithm that comprises:

identifying a case library that includes a plurality of cases representing episodes of problem solving;

applying ~~invoking~~ the plurality of rules ~~action~~ to ~~implement selected rule~~ identify one or more of the cases in the case library that are relevant to discovering the respective influences for the first subset of the monitored component parameters and the second subset of the monitored component parameters; and

adapting one or more solution variable associated with the identified cases using parameterized adaptation logic to discover the respective influences that the first subset of the monitored component parameters and the second subset of the monitored component parameters have on the service parameter.

57.   (**Currently Amended**) The computer-readable medium ~~program~~ of claim [[55]] 49, wherein the one or more data mining algorithms include ~~computer system further performs~~ a ~~step of,~~ decision tree algorithm that comprises:

producing ~~modifying~~ a decision tree that represents the respective influences that the first subset ~~data structure having a representation~~ of the monitored component parameters and the second subset ~~operational characteristic~~ of the monitored component parameters have on the service parameter; and

representing the respective influences that the first subset of the monitored component parameters and the second subset of the monitored component parameters have on the service parameter using one or more of numeric values or binary values.

58.   (**Currently Amended**) The computer-readable medium ~~program~~ of claim 49, wherein the executing the computer-executable instructions on the computer ~~system~~ further cause ~~performs a step of, invoking a database query~~ the computer to generate an alarm in response to detecting ~~determine~~ the ~~operational characteristic~~ change in the state of the ~~network component~~ service.

59.   (Currently Amended)   The computer-readable medium program of claim [[53]] 49, wherein the one or more data mining algorithms include computer system further performs a step of, invoking top N algorithm that comprises:

identifying a predetermined number of the component parameters in the first subset of the monitored component parameters and the second subset reasoning mechanism to determine the operational characteristic of the network monitored component parameters that have a greatest influence on the service parameter; and

producing a list that includes the identified component parameters having the greatest influence on the service parameter, wherein the identified component parameters are listed in a decreasing order of the respective influences that the identified component parameters have on the service parameter.

60.   (Currently Amended)   The computer-readable medium program of claim 49, wherein the one or more data mining algorithms include an inductive logic algorithm that comprises:

incorporating knowledge relating to the plurality computer system further performs a step of, invoking a routine domains of the network and knowledge relating to determine the first subset operational characteristic of the network monitored component parameters and the second subset of the monitored component parameters within a rule base;

inferring the respective influences that each of the first subset of the monitored component parameters and the second subset of the monitored component parameters have on the service parameter using the knowledge incorporated within the rule base; and

producing one or more of propositional statements or quantified statements that express the respective influences that the each of the first subset of the monitored component parameters and the second subset of the monitored component parameters have on the service parameter.

61.   (Currently Amended)   The computer-readable medium program of claim 49, wherein the mining algorithms include computer system further performs a step of, selecting rules from fuzzy logic algorithm that comprises:

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translating the ~~rule repository~~ first subset of the monitored component parameters and ~~invoking actions to implement~~ the second subset of the monitored component parameters into a plurality of respective fuzzy concepts;

determining grades of membership that ~~selected rules until~~ the first subset of the monitored component parameters and the second subset of the monitored component parameters have in the respective fuzzy concepts, wherein the grades of membership quantify transitions between a plurality of states in a state transition graph; and

inferring the respective influences that each of the first subset of the monitored component parameters and the second subset of the monitored component parameters have on the service ~~achieves a desired state~~ parameter from the grades of membership that each of the first subset of the monitored component parameters and the second subset of the monitored component parameters have in the respective fuzzy concepts.

62.   (Cancelled)

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